J. I. CASE LAKE

Vigo County

2004 Fish Management Report

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2006

EXECUTIVE SUMMARY

- J. I. Case Lake is a 54-acre impoundment located in Vigo County. It is owned and maintained by the Vigo County Parks and Recreation Department. The maximum depth is 12 ft and the average depth is 3 ft. A concrete boat ramp is located on the north side of the lake. Motor use is restricted to electric powered only. Shoreline angling opportunities are also available.

- A standard fish survey was conducted at J. I. Case Lake on June 1 to 2, 2004, to assess the fish population after a fish kill in 2003. Water chemistry parameters were normal for this impoundment. The Secchi disk was 4 ft 7 in and the dissolved oxygen was adequate for fish survival to a depth of 6 ft.

- A total of 1,088 fish representing eight species and one hybrid was collected. The bluegill sample consisted of 857 fish ranging from 2.0 to 7.2 in TL. The redear sample consisted of 122 fish ranging from 4.0 to 8.2 in TL. A total of 19 largemouth bass was collected that ranged from 4.1 to 17.2 in TL. Other fish collected in the survey included 31 gizzard shad, 20 black bullhead, 13 channel catfish, 11 hybrid sunfish, 11 warmouth, and 4 black crappie.

- The Tier II aquatic vegetation survey was conducted on July 14, 2004. The predominant submersed vegetation was coontail. Filamentous algae, Eurasian watermilfoil and water stargrass were also collected.

- The 2003 fish kill appears to have lowered the numbers of all species collected compared to the previous survey in 2001. Bass numbers are expected to rebound given the abundant forage opportunities. Bluegill and are still providing a good fishery with 35% greater than 6.0 in TL. Channel catfish from multiple stockings were collected. The Department of Natural Resources should continue to stock channel catfish biennially at 25 catfish/acre.

- J. I. Case Lake will continue to be prone to excessive aquatic vegetation and high production of bluegill due to the lake's shallow, eutrophic nature. The primary goal should be to maintain boating access and shoreline fishing opportunities. Angling by boat may be limited to early in the season before the vegetation has topped out and later in the fall after the vegetation has dropped down. Shoreline fishing during peak aquatic vegetation densities is contingent upon the treatment of those areas.

FIGURES

Figure Page

INTRODUCTION

J. I. Case Lake is a shallow 54-acre impoundment located in Vigo County. The lake is owned and maintained by Vigo County Parks and Recreation Department. The fishery is managed by the Indiana Department of Natural Resources. J. I. Case Lake was originally constructed for waterfowl management purposes, with fishing designated as a secondary use. Prior to impoundment, waterfowl nesting islands were constructed in the lake basin creating a series of interconnected channels. Construction of the lake was completed in 1984. The maximum depth of the lake is 12 ft with an average depth of 3 ft. A concrete boat ramp is located on the north side of the lake for public access. Motor use is restricted to electric powered only. Shoreline angling opportunities are also available.

A pre-impoundment survey revealed bluegill, largemouth bass, black bullheads, and white crappie were present in the channels prior to filling (Andrews 1985). That survey also indicated largemouth bass had produced a strong year class during 1984. An additional 19,000 largemouth bass were stocked in June of 1985. No other fish were stocked either before or after filling.

In 1990, both gizzard shad and black crappie were present in the lake (Andrews 1991). That survey also revealed that aquatic vegetation could have negative impacts on the fishery by providing excessive cover for small panfish. Recommendations were made to increase the vegetation control program and to monitor the development of gizzard shad and crappie populations at the lake. Channel catfish stockings began in 1994 to provide additional fishing opportunities (Andrews 1995).

A general survey was conducted in 2000 with emphasis on the impacts of gizzard shad and crappie on the fishery (Sapp 2001). Results found low numbers of shad and minimal impact on the fishery. Crappie also were present in very low numbers. A fish kill was reported in 2003. This survey was conducted to evaluate changes in the fish population.

METHODS

A standard fish survey was conducted at J. I. Case Lake (Figure 1) from June 1 to 2, 2004, under the Division of Fish and Wildlife work plan number 204478. Sampling effort consisted of 0.75 hr of pulsed DC night electrofishing with two dippers, two overnight trap net sets, and two experimental gill net sets. Fish were measured to 0.1 in TL. Scale samples were

taken from game species for age and growth analysis. District averages were used to estimate fish weight. Proportional Stock Density (PSD) was calculated for largemouth bass and bluegill (Anderson and Neumann 1996). Water chemistry parameters were measured according to the Manual of Fisheries Survey Methods (Shipman et al. 2001).

Tier II aquatic vegetation sampling was conducted on July 14, 2004, according to Pearson (2003). A GPS unit was used to record the location of the limnological data and fish collection sites.

RESULTS

Water chemistry parameters were normal for this impoundment. The Secchi disk reading was 4 ft 7 in and dissolved oxygen was adequate for fish survival to a depth of 6 ft. The aquatic vegetation survey found three species of submersed vegetation to a maximum depth of 11 ft. Coontail dominated the population with a site frequency of 83. Eurasian watermilfoil was found at a low frequency of 14. Water stargrass was collected sparsely. Filamentous algae was found throughout the lake. Creeping waterprimrose and duckweed were also observed.

A total of 1,088 fish representing eight species and one hybrid was collected during the survey with an estimated weight of 168 lbs. Bluegill dominated the catch by number (79%) followed by redear sunfish (11%), gizzard shad (3%), black bullhead (2%), largemouth bass (2%), and channel catfish (1%). Hybrid sunfish, warmouth, and black crappie each represented less than 1% of the total. By weight, bluegill ranked first (52%), followed by gizzard shad (19%), redear (8%), channel catfish (7%), black bullhead (7%), and largemouth bass (5%). Hybrid sunfish, warmouth, and black crappie each made up l% or less of the total weight.

The bluegill sample consisted of 857 fish ranging in length from 2.0 to 7.2 in TL. The electrofishing catch rate was 813.3 bluegill/hr. The PSD was 16. Bluegill greater than 6.0 in accounted for 35% of bluegill collected. Bluegill growth was above average at age 1 and gradually dropped to below average by age 5.

The 122 redear ranged in length from 4.0 to 8.2 in TL. The electrofishing catch rate was 84.0 redear/hr. Redear greater than 6.0 inches accounted for 25% of the redear collected. No age-1 redear were collected. Redear growth was below average for all ages collected.

A total of 19 largemouth bass was collected ranging in length from 4.1 to 17.2 in TL. The electrofishing catch rate was 24.0 bass/hr. The bass PSD was 60. Growth was below

average for ages 1 through 4 and average thereafter. Only one age-4 and two age-5 bass were collected.

There were 31 gizzard shad collected that ranged from 12.9 to 16.0 in TL. The channel catfish sample consisted of 13 catfish from multiple stockings that ranged from 11.2 to 17.2 in TL.

DISCUSSION

The 2003 fish kill appears to have lowered the numbers of all species collected in comparison to the previous survey (Sapp 2001). The bass electrofishing catch rate (24.0 bass/hr) was considerably lower than the 2000 survey (156.0 bass/hr). The electrofishing catch rate for bluegill dropped from 1,214.0 to 813.3 bluegill/hr and the redear electrofishing catch rate dropped from 140.0 to 84.0 redear/hr. Bluegill and redear were still providing good panfishing opportunities. Only 19 largemouth bass were sampled. Growth of all game species was similar to the previous survey, which was below average. Shad numbers have remained low. The shallow, highly vegetative nature of the lake and bass predation has resulted in variable shad recruitment in the past. For this same reason, black crappie have not maintained a significant population. However, based on the catch rates it is likely the predator/prey balance shifted, reducing bass predation on bluegill in particular. Excessive vegetative cover can perpetuate the imbalance created by the fish kill. Crappie and shad are less likely to benefit from a reduction in bass predation because of the lakes' history of variable recruitment. Largemouth bass are expected to recover over the next couple of years provided the vegetation doesn't impede their ability to forage. Channel catfish are providing additional fishing opportunities at J. I. Case Lake. The biennial stocking of 25 channel catfish/acre should continue.

Coontail continues to be the dominating submersed aquatic plant. Plant diversity has decreased. Curlyleaf pondweed, leafy pondweed, chara and watermeal, previously represented in the 2000 survey, were not collected or observed during this survey. J. I. Case Lake will continue to be prone to excessive aquatic vegetation and high production of bluegill due to the lake's shallow, eutrophic nature. The primary goal should be to maintain boating access and shoreline fishing opportunities. Angling by boat may be limited to early in the season before the vegetation has topped out and later in the fall after the vegetation has dropped down. Shoreline fishing during peak aquatic vegetation densities is contingent upon the treatment of those areas.

RECOMMENDATIONS

- The Department of Natural Resources recommends the Vigo County Parks Department continue to manage the aquatic vegetation by maintaining boating access and shoreline fishing opportunities.

- The Department of Natural Resources should continue to stock channel catfish biennially at a rate of 25catfish/acre.

LITERATURE CITED

Anderson, R. O. and R. M. Neumann. 1996. Length, weight, and associated structural indices. Pages 447-481 *in* B. R. Murphy and D. W. Willis, editors. Fisheries Techniques, 2nd edition. American Fisheries Society, Bethesda, Maryland.

Andrews, S.J. 1985. J. I. Case Lake. 1984 Spot Check Survey. Indiana Department of Natural Resources, Division of Fish and Wildlife, Fisheries Section, Indianapolis, IN. 6pp.

Andrews, S.J. 1991. J. I. Case Lake. 1990 Fish Management Report. Indiana Department of Natural Resources, Division of Fish and Wildlife, Fisheries Section, Indianapolis, IN. 12pp.

Andrews, S.J. 1995. J. I. Case Lake. 1994 Fish Management Report. Indiana Department of Natural Resources, Division of Fish and Wildlife, Fisheries Section, Indianapolis, IN. 15pp.

Pearson, J. 2003. Aquatic plant sampling guidelines. Indiana Department of Natural Resources, Division of Fish and Wildlife, Fisheries Section, Indianapolis, IN.

Sapp, S.A. 2001. J. I. Case Lake. 2000 Fish Management Report. Indiana Department of Natural Resources, Indiana polis, IN. 18pp.

Shipman, S., E. Braun, D. Carnahan, L. Koza, B. Schoenung, D. Keller, D. Kittaka, and T. Stefanavage, 2001. Manual of Fisheries Survey Methods. Indiana Department of Natural Resources, Indianapolis, IN. 67pp.

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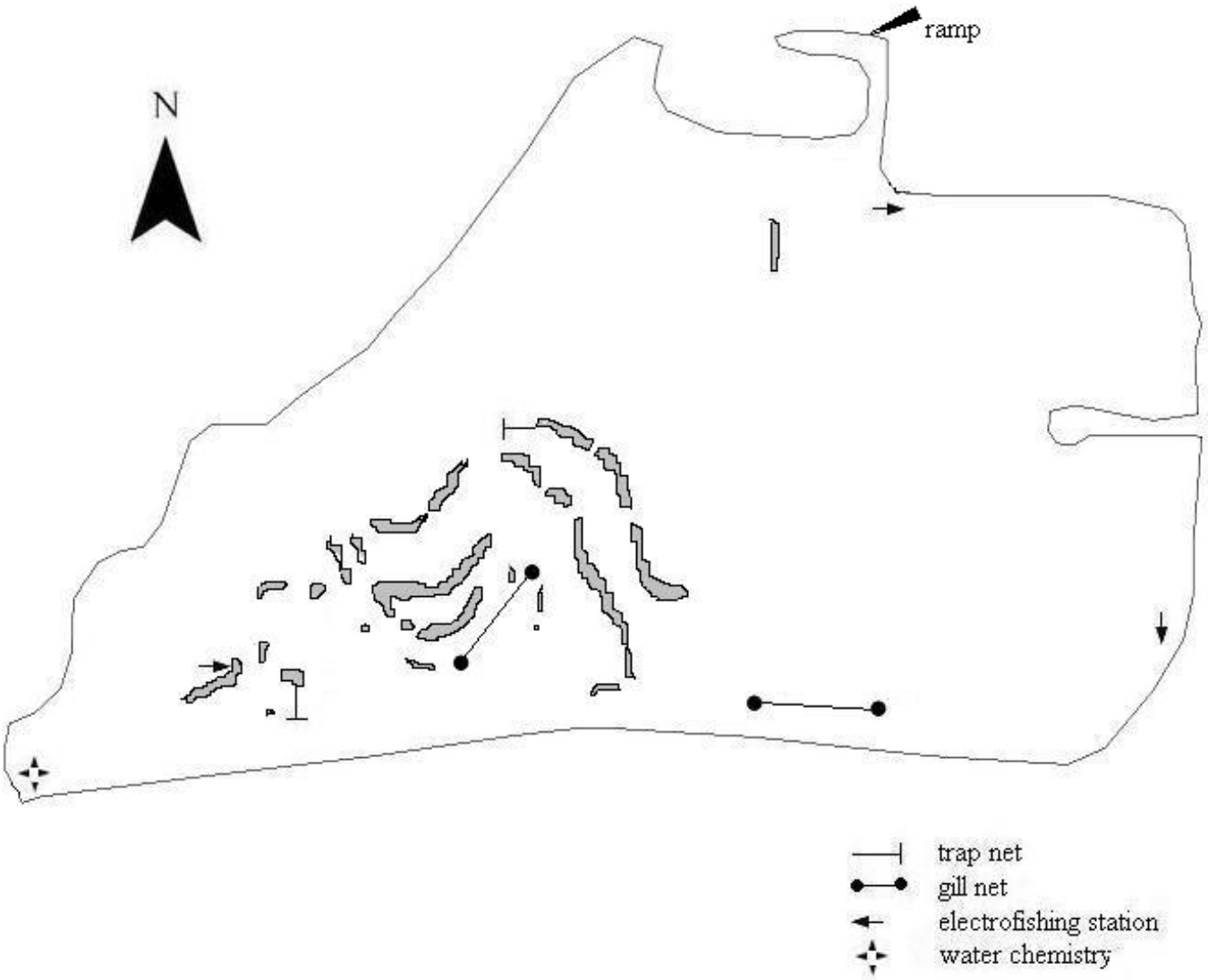

Figure 1. J. I. Case Lake, Vigo County. Location of water chemistry, gill nets, trap nets and electrofishing stations, 2004.